REMARKS

Claims 1-30 are pending in the application.

Claims 1-30 stand rejected.

Claims 1, 4, 6, 7, 11, 14, 16, 17, 21, and 28 have been amended.

Claims 5, 15, and 24 have been cancelled.

Rejection of Claims Under 35 U.S.C. § 102

Claims 1-4, 8-14, 18-23 and 25-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Deitz et al., U.S. Patent No. 6,578,158 (Deitz). Applicants respectfully traverse this rejection.

For the purpose of further clarifying distinctions between Applicants' claims and Deitz, Applicants have amended independent claims 1 and 11 to include substantially the following limitations:

A method comprising:
    detecting a failure of a first virtualization device of a storage area network interconnect,
    said storage area network interconnect is coupled to a metadata host, wherein said metadata host is configured to maintain metadata associated with said first virtualization device, and said metadata host is configured to monitor a heartbeat signal from a plurality of virtualization devices;
    wherein said first virtualization device is associated with a unique interconnect device identifier; and
    associating said unique interconnect device identifier with a second virtualization device of said storage area network interconnect in response to said detecting, wherein said associating comprises modifying said metadata.

See, e.g., claim 1 (amended). As an initial matter, support for these amendments is found, at least, at ¶ 23 of Applicants' Specification. No new matter has been added. The Office Action states that Deitz fails to disclose a metadata host. Office Action, p.9. Therefore, Applicants respectfully submit that the cited passages of Deitz fail to disclose each limitation of claims 1 and 11, which are amended to include a metadata host. Similar

          Application No.: 10/788,698

arguments apply with respect to the other independent claims, claims 15 and 28. Accordingly, Applicants respectfully request withdrawal of these rejections, and of the rejections claims 2-4, 8, 9, 10, 12, 13, 14, 18, 20-23, 25-27, 29, and 30, which depend from these claims.

<u>*Rejection of Claims Under 35 U.S.C. § 103*</u>

Claims 5-7, 15-17 and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Deitz taken in view of Nemoto et al., U.S. Patent No. 7,124,139 (Nemoto).

Applicants have amended independent claims 1, 11, 21, and 28 to include features similar to those previously found in claim 5. Claim 5 is cancelled. Applicants respectfully submit that neither Deitz nor Nemoto, alone or in permissible combination, teaches each limitation recited in the amended independent claims. Namely:

> "said storage area network interconnect is coupled to a metadata host,
> wherein said metadata host is configured to maintain metadata associated
> with said first virtualization device, and said metadata host is configured
> to monitor a heartbeat signal from a plurality of virtualization devices."

The Office Action states that Deitz fails to disclose that storage area network interconnect is further coupled to a metadata host configured to maintain metadata associated with said virtual storage element, a statement with which Applicants agree. The Office Action cites Nemoto as purportedly supplying this missing disclosure. Applicants respectfully submit that Nemoto does not disclose a metadata host configured to maintain metadata associated with a first virtualization device, the metadata host also being configured to monitor a heartbeat signal from a plurality of virtualization devices.

The Office Action equates Nemoto's management server with the claimed metadata host. Even Nemoto's management server could be equated with a metadata host, a point which Applicants do not concede, Nemoto fails to teach or suggest a metadata host configured to maintain metadata associated with a first virtualization device, the metadata host also being configured to monitor a heartbeat signal from a plurality of virtualization devices."

Application No.: 10/788,698

Specifically, Nemoto does not disclose that the management server is configured to monitor a heartbeat signal from a plurality of virtualization devices. To the contrary, when the system disclosed in Nemoto detects a fault, a trap message having the format shown in FIG. 16B is sent to the fault manager, as shown by the following passage:

> ...details on a fault which has occurred in any of the DBMS server **1010**, switch **1020**, and storage device **1030** are communicated to the management server **1000**, as represented by a fault code in the variable bindings field **16009** of the Trap message...

Nemoto 12:54-58. In light of this method, it is unsurprising that Nemoto does not disclose generating and monitoring a heartbeat signal. If a heartbeat signal is used to monitor the status of a device, particularly a virtualization switch, Nemoto has no need of a heartbeat signal because Nemoto discloses receiving a trap message to alert the management server of a fault. No further fault detection method is disclosed or needed. Sending a trap message configured as shown in Nemoto FIG. 16B is clearly not comparable to the claimed monitoring a heartbeat signal from a plurality of virtualization devices.

Nor is this feature taught by Deitz. Deitz discloses controller pairs which communicate between themselves using pings. Deitz 7:35-39. Applicants respectfully submit that Deitz also fails to disclose the claimed metadata host (one configured to monitor a heartbeat signal from a plurality of virtualization devices.) This is intuitively correct, given that Deitz discloses dual-active controller pairs such that when one of the pair fails, failover is handled on the surviving controller in a pair. Deitz 7:44-48. Therefore, Deitz has no need of, and does not disclose, a metadata host configured to monitor heartbeat signals from a plurality of virtualization devices.

The Office Action goes on to say that a person of ordinary skill in the art would have been motivated to combine Deitz and Nemoto "because when a fault occurs in the virtualization device, it is impossible to identify a particular job that is affected by the fault, Nemoto's metadata host allows for determination of the actual jobs." Office Action, p. 9. Applicants respectfully submit that one of ordinary skill in the art would not have been thus motivated, because even if it were possible to add Nemoto to Deitz (which

Applicants respectfully submit is not the case) doing so would not enhance Deitz in any way. Deitz has no need to determine what jobs were affected. All that is needed in Deitz is a determination that one of the dual active controllers has failed. When such a determination is made, the surviving controller initiates a failover which is designed to be transparent to the rest of the system. As noted, the determination that a controller has failed is made by the other controller in the dual active controller pair using a pings between the controllers.

Therefore, determining which jobs have failed would be pointless, unless notification of which jobs failed was going to be provided to some other component of the system. And notifying some other component would change the principle of operation of Deitz and render Deitz unsuitable for the stated objective of making failover transparent to host computers. Nemoto's system uses trap messages for such notification. Applicants respectfully submit that the elaborate processing of trap messages is irrelevant or even detrimental to the system disclosed by Deitz, which is based on transparent failover.

As shown by Applicants, one of ordinary skill would not be motivated to combine Nemoto with Deitz, or if one made such an attempt (an endeavor unlikely to succeed), not only would such a combination render Deitz unsuitable for the stated purpose of transparent failover, such a combination would not teach each element recited in Applicants' claims. Namely, the suggested combination would not teach a metadata host configured to monitor heartbeat signals from a plurality of virtualization devices. Therefore, Applicants respectfully submit that the claims reciting the above features, namely independent claims 1, 11, 21, and 28, are patentable over the proposed combination. Applicants respectfully submit that these claims are in condition for allowance, and respectfully request notice to that effect. Applicants respectfully submit that claims 6, 7, 8-10, 12-14, 18-20, 22, 23, 25-27, 29, and 30 are similarly allowable, at least by virtue of depending from allowable base claims.

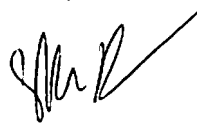Application No.: 10/788,698

Claim 7

The Office Action cites Nemoto 10:63-67 as purportedly disclosing storing a volume map at said second virtualization device. Applicants respectfully disagree. The cited passage reads "The management server **1000** updates the management server management table **2011** in accordance with the processing procedure illustrated in FIG. 17 each time any management information changes." The Office Action appears to equate the management server management table with a volume map. Applicants do not concede that the two are not comparable, but even if such were the case, the cited passage clearly discloses storing updates in the management server. Storing updates *in a management server* is not comparable to storing a volume map *at a second virtualization device*. Reference to Nemoto's FIG. 2 clearly shows that the management table is resident in memory of the management server. The Office Action previously equated the management server with Applicants' metadata host, not a second virtualization device. Since the cited passage does not disclose storing a volume map at a second virtualization device, Applicants respectfully request withdrawal of this rejection.

CONCLUSION

In view of the amendments and remarks set forth herein, the application and the claims therein are believed to be in condition for allowance without any further examination and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is invited to telephone the undersigned at 512-439-5092.

If any extensions of time under 37 C.F.R. § 1.136(a) are required in order for this submission to be considered timely, Applicant hereby petitions for such extensions. Applicant also hereby authorizes that any fees due for such extensions or any other fee associated with this submission, as specified in 37 C.F.R. § 1.16 or § 1.17, be charged to Deposit Account 502306.

Respectfully submitted,

Shawn Doman
Attorney for Applicants
Reg. No. 60,362
Telephone: (512) 439-5092
Facsimile: (512) 439-5099